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ABSTRACT

This study used data from the Panel Study of Income Dynamics (PSID) to assess the extent to which economic status is transmitted from one generation to the next, focusing on whether the effect of parental income on sons' family income and wages changed for cohorts between 1949 and 1965. The PSID is a longitudinal data set initiated with a core sample of approximately 4,800 families in 1968. This study includes all males born between 1949-65 whose parents responded to the survey and who had positive income or wages when they were 30 years old. Results indicated that the effect of parental income on sons' family income and wages at age 30 declined. This was largely because the effect of parental income on sons' years of schooling declined. The decline in the effect of parental income is not part of an overall decline in the effect of family background. The effect of parents' education on sons' economic status did not decline and may have increased; however, the effect of other family background characteristics hardly changed. The researchers suggest that the decline in the effect of parental income on sons' income may be due to the increase in government investment in children, especially in their educational attainment. (SM)

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Has the Intergenerational Transmission of Economic Status Changed?

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Abstract

We use data from the PSID to assess whether the effect of parental income on son's economic status has changed for cohorts born between 1949 and 1965. We find that the effect of parental income on sons' family income and wages at age thirty declined over this period. This was largely because the effect of parental income on son's years of schooling declined. The decline in the effect of parental income is not part of an overall decline in the effect of family background. The effect of parents' education on sons' economic status did not decline and may have increased and the effect of other family background characteristics hardly changed. We suggest that the decline in the effect of parental income on son's income may be due to the increase in government investment in children, especially in their educational attainment.

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Has the Intergenerational Transmission of Economic Status Changed?

Susan E. Mayer and Leonard M. Lopoo

The extent to which economic status is transmitted from one generation to the next has long been of interest to social scientists and policy makers. This interest largely arises because of the belief that the intergenerational transmission of economic status violates norms of equal opportunity. Imagine two societies with exactly the same mean, variance, and distribution of income. In Society A, children's economic status is perfectly correlated with their parent's economic status, and in Society B there is no correlation. Most people would agree that opportunity was more equal in Society B.

Understanding changes in the intergenerational transmission of economic status is important for several reasons. Substantively, understanding changes in intergenerational mobility can help us understand the implications of the rise in inequality over the last twenty-five years. Inequality can grow because rich and poor children's opportunities diverge leaving their incomes farther apart than their parents' incomes. But inequality can grow even when the intergenerational transmission of economic status declines. In this case the economic fortunes of children diverge but their fortunes depend less on their parents income. These two scenarios imply quite different conclusions about the consequences of growing inequality for poor children and about equality of opportunity in general.

At a more technical level knowing whether mobility has changed is important because estimates of intergeneration mobility often group data on cohorts of children born over many years. Other studies measure outcomes in a particular year for respondents of different ages. Such estimates are in effect an average for all birth cohorts included in the sample. If mobility has changed over time, estimates of mobility will be sensitive to the years over which mobility is measured.

1. Previous Research on Intergenerational Mobility

Many studies have estimated the intergenerational transmission of economic status in the United States. (See Solon, 2000, for a review of these studies.) A few compare economic mobility in the United States with economic mobility in other countries. (See Bjorklund and Jantti, 2000, for a review.). Many fewer studies have tried to determine whether economic mobility has changed over time.

When economic status is measured by income, wages or earnings, the correlation between a measure of father's economic status in a randomly selected year and the same measure of his son's economic status in a randomly selected year is usually .20 or less (Sewell and Hauser 1975, Behrmen, Taubman and Wales 1980, Behrman and Taubman 1990, Becker and Tomes 1986). Averaging income over several years reduces the importance of measurement error due to the transitory component of income. Thus the correlation between parents' economic status averaged over several years and a son's economic status averaged over several years tends to be larger than the single year correlation, suggesting much less intergenerational mobility (Solon 1992, Zimmerman 1992, Altonji and Dunn 1991). Previous research also shows that estimates of the intergenerational transmission of economic status rise with the age at which children's outcomes are measured and are greater for wealth than for earnings, wages, or schooling (Bowles and Gintis 2000, Solon 2000).

But even estimates of intergenerational mobility that average parental economic status over several years and use the same data for the same outcome vary considerably. Among

eighteen studies using PSID data and averaging parental income over several years, the elasticity of son's earnings with respect to father's earnings varies from .13 to .53.[2] Of these estimates, three are less than .30, five are between .30 and .40, eight are between .40 and .50 and two are above .50. If we consider only the five studies that estimate the effect of father's earnings averaged over five years on son's annual earnings measured in a specific year, the estimates range from .32 to .53. Three studies of these five use data on sons born between 1951 and 1959. They yield elasticities of .39, .41, and .53. The other two studies include more recent cohorts and have lower estimates, .34 and .31.

Recent research by sociologists finds that the relationship between fathers' and sons' occupational status has not increased and probably has decreased in the last thirty years (Biblarz et al. 1996, Grusky and DiPrete 1990, Hout 1988, Gottschalk et al. 1994). Other sociological research suggests a long-term gradual decrease in intergenerational occupational mobility. For example, Featherman and Hauser (1978) found that the effects of family background were lower in the 1973 than in the 1962 Occupational Changes in a Generation Survey. Occupational status and income are related, but they do not measure the same thing and the correlation is typically less than .50 in the U.S. (Duncan et al. 1972). Thus trends in the association between parents' and children's occupational status need not follow the same trend as the association between parents' and children's economic status.

Three studies estimate the trend in the effect of family income on sons' income. Corcoran (2001) using PSID data finds that the effect of parental income on son's labor market income, hourly wages, and family income was less for sons who turned twenty in the 1980s than for sons who turned twenty in the 1970s.

Levine (1999) uses data from the National Longitudinal Surveys of Labor Market Experience young men and youth cohorts to look at changes in the effect of family background between sons born in 1942-1952 and son's born in 1957-1965. Levine estimates the increment in R^2 from a model that predicts son's income from son's race and age, whether he lives in the South and whether parent's education is missing and a model that adds parents' education and income. The increment in R^2 is greater for sons born in 1942-1952 than for sons born in 1957-65. Thus Levine argues that the effect of family background increased between the two periods. But the R^2 is actually lower in the second than in the first period. Thus whether the effect of family background has increased depends on what one counts as family background. If, as seems reasonable, race and having missing parental education are indicators of family background, these results show that the effect of family background had declined.

Levine's estimates suggest that the effect of parental income and father's education rose between the two periods while the effect of maternal education declined. He does not test the statistical significance of the change in the coefficients.[3] Because parental income and educational attainment are highly correlated and the measure of income in the NLS and NLSY is a weak proxy for permanent income, the effect of education is no doubt partly an effect of permanent income. Levine repeats these models with a sub-sample of respondents to the General Social Survey (GSS) who were aged 24 to 32 in 1972-1980 or 1985-1993 and obtains similar results.

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[2] These numbers are from Table 3 in Solon (2000).

[3] Nor does Levine discuss how he treated income top-coding or other potential changes in how income was coded in the two surveys.

Using the GSS Hauser (1998) develops a proxy for father's income by assigning him the mean income of his occupation. Hauser finds no clear trend between 1972 and 1996 in the correlation between father's income and son's income among non-black men aged twenty-five to thirty-four (or for older men either). His estimates of the intergenerational elasticity range from .365 to .277. Hauser uses the same technique to impute father's income and then to estimate the trend in the relationship between father's income and son's income using the 1962 and 1973 Occupational Change in a Generation (OCG) surveys and 1986-1988 Survey of Income and Program Participation. Again he finds no clear trend in the effect of father's income on son's income. Hauser repeats these analyses using the mean educational attainment of father's occupation as a proxy for father's own education. He finds that the effect of father's education is in all data sets and in all years greater than the effect of father's income. However, he finds no trend in the effect of father's education on son's income.

Thus one study finds than the effect of parental income declined, one finds that it increased and the third finds that it did not change. Levine and Hauser find opposite trend using GSS data for sons of about the same age. But they use very different income measures. Levine uses parental income as reported by sons while Hauser imputes father's income from father's occupation, ignoring mother's income. Hauser's technique has the advantage of trying to capture the permanent component of income while Levine's measure relies on the transitory component. Hauser's technique could provide biased trend estimates if the link between occupation and income weakened over time.[4] Levine's trend estimates could be biased if the ability of son's to report parent's income changed over time. Levine's estimates of the effect of parental income control parental education while Corcoran and Hauser's estimates are bi-variate. Only Corcoran's estimates average parental income over several years. Levine confines his sample to children in two-parent families, while Hauser and Corcoran include children in families headed by women.

II. Why Economic Mobility Could Change

Economists usually estimate the relationship between a parent's economic status (Y_p) and a child's (Y_c) economic status using:

$$\ln Y_c = \alpha + \beta_p \ln Y_p + \varepsilon_c. \qquad (1)$$

In equation 1 β_p is the elasticity of children's income with respect to parents' income. If $\beta_p = .10$ for example, children who grew up in families whose income differed by say 100 percent would have incomes that differ by ten percent on average. Mobility, then, is defined as $1 - \beta_p$.

The economic model underlying equation 1 is the human capital model. It holds that a child's economic status is a function of parental endowments and investments in their children. Endowments include biological and genetic characteristics such as I.Q. and eye color. Monetary investments are the goods and services that help children succeed such as nutritious meals, schooling, and health care. According to this model, affluent parents can afford to invest more in their children, so children of affluent parents are more likely to be affluent than children of poorer parents. Psychologists and sociologists usually emphasize a third mechanism to explain

[4] Inequality grew both within and between occupations over the late 1980s and early 1990s. The growth in inequality within occupations presumably reduced the correlation between the mean income of an occupation and the income of specific workers in that occupation.

the relationship between parents' and children's economic status, namely non-monetary investments such as good parenting, high expectations, and emotional support. According to these models, low income increases parents' stress and thus reduces their ability to make non-monetary investments in their children.

Given this model, and assuming that over fairly short periods of time the genetic transmission of characteristics does not change, the effect of parental income on children's economic status can change under at least three circumstances: 1) the relative investments in rich and poor children can change, 2) the payoff to the investments can change, or 3) the returns to genetic or biologically transmitted characteristics can change.

Changes in the relative investments in rich and poor children. As inequality increases, we might expect an increase in the inequality of investments that rich and poor parents can make in their children. However, parents are not the only source of investment in children. Federal and state government expenditures on behalf of children have increased greatly over the past thirty years, and much of this spending was intended to reduce the "investment gap" between rich and poor children. Means-tested programs such as Medicaid, food stamps, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Head Start, and Pell Grants for college expenses were designed to increase investment in the health, nutrition, and knowledge of poor children. Between 1970 and 1992 real spending on Head Start doubled. Since it was implemented in 1977, the number of people served by the WIC has increased from .8 to 7.2 million and expenditures have increased from $668 million to $3.7 billion (1996 constant dollars, in 1996 Green Book 1998). The School Lunch and School Breakfast program have experienced similar growth. In 1995 the federal government spent over $2,000 for every child under the age of eighteen in the United States (Green Book 1993 pg 1567), most of it targeted at low income children. If these programs achieved their intended result, the effect of parental income should be lower for children reared after the programs were implemented than for children reared before the programs existed.

Universal government programs can also reduce the investment gap under some circumstances. Most social scientists assume that a child's economic success increases at a diminishing rate as the level of investment in the child rises. Although the empirical evidence for this assumption is weak, some research suggests that the effect of parental income on children's educational attainment and eventual wages is nonlinear and concave downward (Duncan et al. 1998, Mayer 1997). This implies that the first dollar of investment creates the greatest increase in the economic well-being of the child. It also implies that when institutions outside the family invest equally in all children, poor children are likely to gain more than affluent children, because poor children's parents have not invested as much. Probably the most important government investment in children is public schools. Total per pupil spending on public education increased from $3,642 in 1972 to $5,576 in 1992 (in constant dollars) and it became more equal across school districts within states (Murray et al. 1998).

Changes in returns to investments in children. Changes in the returns to parental investments can also affect intergenerational mobility. Returns to schooling have increased over the last twenty years. If parents continue to invest the same amount in their children's schooling and nothing else changes, an increase in the return to schooling would mean that inequality between affluent children (who are more likely to go to college) and poorer children (who are less likely to go to college) would increase. Put another way, if the effect of parental income on their

children's schooling does not change, but the returns to schooling increases, the effect of parental income on children's income will increase. The increase in the return to schooling and the increase in government investments in children could off-set one another leading to no change in intergenerational mobility.

Changes in returns to genetic traits. Changes in the returns to genetic traits passed from parents to children can also affect intergenerational mobility. Cognitive skills are partly genetically transmitted and parents with high cognitive skills have higher income than parents with low cognitive skills. When returns to cognitive test scores increase, as they seem to have done in the United States since 1980, and nothing else changes, the intergenerational correlation of economic status would increase.

The economic returns to other genetic traits also may have changed. Historically, black parents had averaged lower incomes than white parents and black children have averaged lower incomes than white children. If the cost of being black declines and nothing else changes, the intergenerational correlation of economic status could decrease.[5] If the effect of race on children's economic status declined, the estimated effect of parental economic status would decline.

Thus changes in intergenerational mobility can arise from many sources. We also assess the possibility that changes in data quality and demographic trends affect the trend in intergenerational mobility.

III. Methods

Research on intergenerational mobility often refers to β_p as the intergenerational correlation of economic status. The estimated value of β_p, is defined as follows:

$$\hat{\beta}_p = (r_{\ln Y_c, \ln Y_p})(\frac{s_{\ln Y_c}}{s_{\ln Y_p}})$$

where $r_{\ln Yc, \ln Yp}$ is the sample correlation between the log of the parents' and the log of children's economic status and $s_{\ln Yc}$ and $s_{\ln Yp}$ are the standard deviation of the logarithm of children's and the logarithm of parents' economic status, respectively.

If the variance of the measure of parents' economic status is equal to the variance of the children's economic status, then β_p is equivalent to the correlation between the logarithm of the parents' and the logarithm of the child's economic status. The degree of intergenerational mobility is then $1 - \beta_p$. However, when inequality is growing, estimating the intergenerational correlation using β_p could be misleading. Unless the growth in inequality is the same for both generations, the ratio of the variance of parent's and children's economic status will change over time, and β_p will be an increasingly inaccurate estimate of the intergenerational correlation of

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[5] Imagine that the following model accurately predicts child c's income from parent p's income and a dummy variable for being black.

$I_c = \alpha + \beta_1 I_p + \beta_2 B_i + \varepsilon_i$

If at time 1 black parents have lower incomes than white parents, and β_2 is negative, then omitting B_i from this model will produce an upwardly biased estimate of β_1. If then at time 2, β_2 is zero, β_1 will presumably decrease because it will no longer be upwardly biased.

economic status. In particular if the variance of children's income grows faster than the variance of parent's income, β_p will be an increasingly upwardly biased estimate of the intergenerational correlation. Traditionally, this problem has been "swept under the rug" (Solon, 1992).

We follow the literature and report this measure of β_p. We also estimate the standardized coefficient, Beta, from equation 1. Beta is estimated as follows:

$$\hat{\beta}_p = \left(\frac{S_{\ln Y_p}}{S_{\ln Y_c}} \right) = r_{\ln Y_c, \ln Y_p} = Beta \tag{3}$$

In this bi-variate regression Beta is equivalent to the correlation between parent's and children's economic status. Trends in its value are unaffected by changes in the variance of either generation's income distribution. Thus, 1-Beta is in principle a better measure of intergenerational mobility than 1-β_p. Beta is interpreted as the predicted standard deviation change in Y_c for each standard deviation change in Y_p. Thus it tells us the extent to which children's relative economic status corresponds to their parent's relative economic status.

Most models of intergenerational mobility estimate the effect of a measure of parental economic status on the same measure for the child. Thus they estimate the effect of, say father's wage on son's wage or father's earnings on son's earnings. Such models are in the tradition of Galton (1886) and others who try to estimate the "inheritability" of traits. In this framework it makes sense to estimate the effect of a parental characteristic on the same characteristic among children just as one would estimate the effect of parental eye color on child's eye color but not on child's I.Q. In addition, the variance of the same outcome for parents and children is likely to be about equal, so that β_p can be interpreted as the intergenerational correlation when models predict children's economic status from the same measure of parents' economic status.

As noted the economic model that predicts a relationship between the economic status of parents and children is mainly a human capital model that emphasizes parental investment in children. Because we adopt the logic of the human capital model, we take family income as an indicator of parent's potential monetary investment in children. We estimate the effect of family income on two measures of son' economic status, namely hourly wages and household income, both measured when the son was thirty years old. Parental investments in their children affect children's human capital, which should affect their wage rate. The son's family income is the result not only of the son's endowments and parental investment, but also the son's decisions about how many hours to work and his living arrangements. Thus trends in the relationship between parental income and son's income may not be the same as trends in the effect of parental income on son's wage rate.

We confine our analysis to sons for two reasons. First, most of the previous research on the intergenerational transmission of economic status has been on sons and we compare our results to these earlier studies. Second, wages at age thirty is likely to be a worse measure of women's than men's permanent wage rate. Women's wages are influenced by their fertility choices. At age thirty some women will have had children and taken time off from work to care for them. Others will have children in the future and take time off then. The current wages of the former will be lower than the current wages of the latter even when their life-time earnings are the same. The age at first birth has increased, and it has increased more for highly educated women than for women with fewer years of schooling. If the characteristics of women who

work have changed over time and these changes are associated with parental income, it could bias the trend in effect of parental income on labor market outcomes.

Equation 1 estimates the effect of parental income *and all its correlates* on children's economic success. There are numerous avenues through which this relationship can arise including through parents' cognitive skill, education, and parenting skills. It is possible for the correlation between parent's and children's economic status to remain constant if the effect of some correlates of parental income increase while others decrease. To account for this possibility, we estimate models that control several other family background characteristics. However, like other studies of intergenerational mobility, we do not make a definitive attempt to decompose β_p into its causal components.

IV. Data

We use the Panel Study of Income Dynamics (PSID). The PSID is a longitudinal data set initiated with a core sample of approximately 4,800 families in 1968. When children in the original sample established their own households, they and all members of their new households were included in the data set, thereby increasing the sample size over time. Our PSID sample includes all males born between 1949 and 1965 whose parents were respondents to the survey and who had positive income or wages when they were thirty years old. The structure of the PSID implies that these men were heads of household when they were thirty.[6]

We average parental income over the years when a child was aged nineteen to twenty-five.[7] Families with less than three years of income were excluded in order to minimize error in the measurement of the parents' permanent income.[8]

Although the PSID is the only data set available with sufficient information on both parents and sons to estimate intergenerational mobility, it is not ideal. The number of males who turned thirty in each year is small, and the cohorts span a fairly short historical period. Table 1 describes the sample by three or four-year birth cohorts. Although the cohorts span only seventeen years, they include a period in which important changes were taking place. These sons reached age thirty during years when economic inequality was growing, in part because of an increase in returns to skills. Significant parts of the childhood of the youn_er groups occurred after 1968, when government investments in children began to increase steeply. Appendix A describes the variables that we use.

Table 2 shows the means and standard deviations for log parental income and the two measures of son's economic status for three or four year cohorts.[9] Parental income increased

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[6] We use all available years of PSID data. Early release data are available for years after 1992, but these data are missing many more cases on the wage variable than previous years, the mean wage is higher than in previous years and the variance is much greater than in previous years. Thus we do not use the early release wage data. In January of 2001, the Survey Research Center, Institute for Social Research, at the University of Michigan released an early version of family income data. We have incorporated the early release income data, which provides information on men born through 1965.

[7] We assume that family income when children are nineteen to twenty-five is strongly correlated with their family income when they were younger. See the Appendix for a test of this assumption.

[8] We trim the bottom and top 1 percent of the son's income and wage distribution to remove the influence of observations with considerable measurement error. Because we average parental income over several years, we do not trim it.

while sons' income at age thirty declined over time. Son's hourly wages at age thirty hardly changed.

Generally, the standard deviation of both parents' and sons' family income increased over time, reflecting the rise in economic inequality over this period. The increase in the standard deviation of log income was about the same for parents and sons. The ratio of parent's log income to son's log income is 1.14 for the oldest cohort and 1.03 for the youngest cohort. Because this ratio is close to 1 for all cohorts, β_p should be approximately equal to Beta in all years. The standard deviation of parent's income is greater than the standard deviation of son's log hourly wages in most years.

V. Results

For all sons born between 1949 and 1965 who were thirty years old when their economic status was measured, the elasticity between parental income and son's income is .305, the elasticity between parental income and son's wages is .266. These estimates are lower than the estimates of the intergenerational correlation of economic status obtained by Solon (1992) and in the lower range of other studies that use the PSID and average parental income over several years. For example, Solon finds that the elasticity between parental income measured in only one year and son's family income is .483.

Because our emphasis is on the trend in intergenerational mobility and not the level of intergenerational mobility, and estimating changes in mobility requires a different data structure, we do not try to reconcile our estimates with others. Nonetheless, recognizing a few differences between our estimate and Solon's is important. Unlike Solon, we include sons whose fathers were not present in the home. When Solon includes sons from mother-headed families in his sample the elasticity decreases from .48 to .44. When we limit our sample to sons from married parent families, our elasticity rises from .305 to .317. Solon's sample includes sons born between 1951 and 1959. When we confine our sample to sons born in these years who live with their fathers, our elasticity rises to .378. [10] We drop sons whose income or wages is in the top 1 percent or bottom 1 percent of the income or wage distribution to avoid the influence of outliers. Solon (1992) reports that excluding sons and fathers with annual earnings less than $1,000 1967 dollars reduces β_p. Solon apparently uses unweighted data. Because our trends are intended to be descriptive, we weight the data using the 1995 person weight. β_p is larger (.409) when we use unweighted data, although the trend is the same with weighted or unweighted data. None of these differences are likely to affect the trend in intergenerational mobility.

The Trend. Figures 1 and 2 present our basic results. These show the trend in the effect of parental income estimated from equation 1. To smooth the trend, we divided the sample into

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[9] We inflate all income values to 1995 dollars using the CPI-U-X1. This should have no affect on trends in the relationship between parents' and sons' income. We adjust the dollars for the purpose of presenting means.

[10] There are other differences between our estimate and Solon's estimate that could conceivable make our estimates higher. Solon omits respondents who were part of the Survey of Economic Opportunity, a survey component that over-represented families with low-income in 1967. We include these respondents. Solon reports that including respondents in this sample raises β_p. Solon measured father's economic status in 1967 to 1971. In our data father's economic status can be measured anytime between 1968 and 1990. Parents are older when income is measured in our sample compared to Solon. We measure son's economic status at age thirty. Solon's sample included son's aged between 25 and 33 years but the mean age of sons was 29.6 years.

fourteen overlapping or "rolling" groups (ten for the wage sample). Males born between 1949 and 1952 are group one. Males born between 1950 and 1953 are group two and so on through males born in 1965. The estimated effect of parental income is thus a moving average in which each individual appears three or four times. The data shown in Figures 1 and 2 are also shown in Appendix Table A.2.

Figure 1 shows that the elasticity of son's income with respect to parent's income declined over time. In Figure 1 the elasticity for children born between 1950 and 1956 ranges between .320 and .432 (see Table B.3). As noted above in the three studies that use PSID data, average father's earnings over five years and include sons born between 1951 and 1959, the estimated elasticities are .39, .41, and .53. Thus in our sample β_p is close to the most common estimates of intergenerational mobility from other similar studies. The smaller elasticity in our total sample is due to the decline in the effect of parental income for more recent cohorts. For cohorts born between 1957 and 1965 the elasticity is between .207 and .297.

Figure 1 shows that Beta follows roughly the same trend as the elasticity and in most years is quite close to the elasticity. Figure 1 also shows that the effect of parental income declined even more when we control some of the main correlates of parental income, although it appears to have risen for the last cohort. Figure 2 shows the relationship between parental income and son's hourly wage. Both the elasticity and Beta decline for sons born after about 1952.[11]

To estimate whether these trends are statistically significant, we estimate the following model:

$$\ln Y_c = \alpha + \beta \ln Y_p + \gamma(\ln Y_p * \text{year}) + \delta \text{year}, \qquad (4)$$

where year is a continuous variable ranging from zero for sons born in 1949 to sixteen for sons born in 1965. The effect of year (δ) tells us if son's wages or income changed over time. The interaction tells us if the effect of parental income on son's economic status has changed over time. If γ is statistically significant, the trend is significant. Results from these models are presented in Table 3. The first column of Table 3 show that the linear trend in the elasticity of parents' income and son's income is not statistically significant. However, when we measure the trend for sons born after 1953, the trend is negative and statistically significant at the 0.05 level.[12] The second column shows that the trend for the elasticity between parents' income and son's wages is negative but insignificant at the .10 level.[13] As can be seen in Figures 1 and 2 the

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[11] Note that β_p is greater than Beta for sons born from about 1950 to about 1958. When we confine our sample to sons born between 1951 and 1959 who lived with married parents the elasticity (.370) is greater than the Beta (.358). This suggests that Solon's estimate of the elasticity may have been an over-statement of the intergenerational correlation.

[12] Because the time trend was clearly not linear in all cases, we estimate a second model in which we include dummy variables for four (three for wages) independent cohorts (C) and an interaction between each cohort and parental income. This model is

$$\ln Y_c = \alpha + \beta \ln Y_p + \delta_1 C_1 + \delta_2 C_2 + \delta_3 C_3 + \delta_4 C_4 + \gamma_1(\ln Y_p * C_1) + \gamma_2(\ln Y_p * C_2) + \gamma_3(\ln Y_p * C_3) + \gamma_4(\ln Y_p * C_4) \qquad (5)$$

We then test for the statistical significance of each interaction. The interactions tell us whether the effect of income is lower in that cohort compared to the omitted cohort. In tests of the significance of trends we omit the cohort with the largest elasticity between parental income and son's outcomes. We also experimented with standardizing parental income and son's outcomes to constrain the standard deviations to be the same. In the bi-variate models then the elasticity and the correlation are equal. We then re-estimated the significance of the trend. However, these estimates are very similar to the ones we report.

downward trend in the effect of parental income on wages is as steep as the downward trend for the effect of parental income on wages. However, there are fewer cohorts and hence a smaller sample, resulting in a larger confidence interval.

Explaining the Trend. We now turn to explaining why the effect of parental income on son's income has declined. We first consider the extent to which the decline is due a general decline in the effect of family background. Then we consider several potential measurement issues that could account for the trend.

The first column of Table 4 shows the elasticities for our three or four year cohorts. The second column shows that much of the effect of parental income on son' income is accounted for by its effect on son's wages. This is what we would expect if the "investment" gap between high and low-income children declined such that the effect of parental income on children's human capital and hence wage rate declined.

To assess the effect of parental income on son's human capital, Figure 3 shows the elasticity between parental income and son's years of schooling using rolling cohorts. The effect of parental income on son's years of schooling declined for cohorts born before 1960, but then increased. Unfortunately, the PSID changed the way it codes respondent's education after 1985. We measure son's education at age twenty-five. Thus son's born after 1960, were subject to the new coding scheme. These are the son's for whom the relationship between parent's income and son's years of schooling increases. Although we tried to make the PSID time series consistent, we cannot rule out the possibility that this increase is due to the methodological change. The decline over the first three cohorts is statistically significant.[14]

There is reason to think that the effect of parental income on son's education actually did increase for children who were college age in the late 1980s. Ellwood and Kane (1999) find an increase in the effect of parental income on children's chances of enrolling in college when they compare High School and Beyond seniors in 1980 and 1[illegible]2 to the National Educational Longitudinal Survey of 1988, which included children who graduated high school in about 1992. These two surveys cover the time period when the PSID results show an increase in the effect of parental income on children's college enrolment.[15] Manski (1993) using data from the Current Population Survey finds an increase in the effect of parental income on children's college enrollment between 1970 and 1988 (for sons born in approximately 1950-1968 who live at home). However, he also finds that the correlation between parental income and children's chances of graduating college hardly changed between the National Longitudinal Survey of the Class of 1972 and the High School and Beyond Survey of the class of 1980. Thus there is considerable uncertainty about the trend in the effect of parental income on children's educational attainment.

The last column in Table 4 shows that the effect of parental income on son's income declines to almost zero when son's schooling is controlled. The trend in the effect of parental income on son's wages also declines when son's schooling is controlled. Thus a large part of the effect of parental income on son's income is due to the effect of parental income on son's

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[14] This is shown in the following equation where the t-statistics as shown in parenthesis below each estimate.:

$$Educ_s = -3.764 + 1.572\,(\ln Y_p) + 1.106\,(year) - .109(Y_p * year)$$
$$\qquad\qquad (6.376) \qquad\quad (2.251) \qquad\quad (-2.418)$$

[15] The increase in the effect of parental income on college enrollment is not statistically significant in Ellwood and Kane.

education (although the trend in the effect of parental income on son's income and wages remains downward even when son's education is controlled).

The effect of parental income on son's wages and income could have declined because the effect of important correlates of parental income on children's economic status declined. But Figures 1 and 2 show that the decline in the effect of parental income on son's income and wages is steeper when we control parent's education and marital status and son's race, suggesting that some of the correlates of parental income may have become more important to children's economic success at the same time that parental income was becoming less important. This is what we would expect if the decline in the elasticity is due to an increase in non-family investments in children, because government programs were mainly intended to address problems associated with low parental income. Only a few programs were intended to address other parental characteristics such as low cognitive ability or ineffective parenting.

Table 5 shows that the effect of parental education (controlling parental income) on son's family income and wages was greater for cohorts born after 1957 than for cohorts born before then. This is the opposite of Levine's (1999) results. He confines his comparison to men raised in two-parent families born between 1942-1952 and 1957-1965. He does not control any other family background characteristics besides race and his measure of income is very weak making it difficult to distinguish between the effect of parental income and education.[16] In Table 5 the effect of parents' marital status and child's race did not change in any consistent way for sons born since 1949. This is consistent with some previous research (Biblarz and Raftery 1999) but it is at odds with Levine's results, which show a decline in the effect of being black.

There is no strong trend in the R^2 for models predicting son's income from parental income, education, and marital status and son's race for cohorts born before 1960. But R^2 is much lower for the last two cohorts. We suspect that the decline in R^2 for the last cohort does not represent a true decline in the effect of family background. These data are from the "early release" files and parental education was measured somewhat differently in this cohort than in the previous cohorts.[17] Thus while it seems clear that the effect of parental income on son's income declined, we are unable to draw strong conclusions about the trend in the effect of family background on son's income. However, Table 5 suggests that the effect of family background on son's wages did not decline. Thus we conclude that the decline in the effect of parental income is probably not part of an overall decline in the effect of family background characteristics on children's economic outcomes.

The decline in the effect of parental income on son's income and wages could arise for reasons unrelated to policy or labor market changes. One possibility is that the measure of family income became a less accurate indicator of permanent family income over time. This could happen if for example, parents were older or more likely to be retired in more recent cohorts. The mean age of the head of the household was 47.6 years for the oldest cohort, 47.4 for the next cohort, 48.7, 48.0, and 46.8 for the younger cohorts. Thus changes in the age of the

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[16] The weak measure of income is evident in the very small elasticity between parents' and son's income. The elasticity is .111 for sons born in 1942-1952 and .196 for sons born in 1957-1965. In contrast the elasticities in Table 5 for the earlier period are around .320.

[17] As noted in the text the PSID changed the way it measured education in 1985. For son's born in 1965 whose mother did not have a value for education when the son was nineteen years old, we measure mother's education when he was age twenty, which would be in 1985. Early release data tends to have a higher number of missing cases than final data and this could account for the very small effect of parental education on son's income in the youngest cohort.

household head cannot account for the trend in the effect of family income. About 11.2 percent of household heads in the oldest cohort were retired compared to 16.9 in the youngest cohort. When we control the age of the head of household and whether the head was retired, the downward trend in the effect of parental income on son's income is steeper, declining from .372 for the oldest cohort to .195 for the youngest cohort compared to a decline from .348 to .233 when these are not controlled. The trend for the effect of parental income on wages hardly changes.

The elasticity might decline if sons' economic status at age thirty was a worse measure of permanent economic status for younger than for older cohorts. This could happen if sons take longer to complete their schooling, if they take more time off from school and work to travel or do volunteer work, or if they are otherwise less likely to settle into their permanent job status by age thirty. There is no obvious direct way to assess this possibility. But if younger cohorts take longer to achieve their permanent job status, we might expect more thirty-year-olds to be living with their parents and fewer to have wages and earnings. We also might expect work experience at age thirty to have declined.

Appendix Table 1 shows that sons' mean annual labor market experience at age thirty declined by 1,879 hours (11.3 percent) between the oldest and the youngest cohorts. The correlation between parental income and son's labor market experience went from -.118 for the oldest cohort to -.188 for the youngest cohort. Thus children of affluent parents averaged fewer hours of work in all cohorts. But even for the youngest cohort the correlation between parental income and labor market experience is modest. In addition, controlling labor market experience hardly changed the trend in the effect of parental income on either son's wages or income. When we control labor market experience the elasticity between parents' and sons' family income goes from .356 in the oldest cohort to .445 to .265 in the youngest cohort.

Eighty-five percent of males born in 1949 were heads of household by age thirty compared to 88 percent of males born in 1962. Seventy-four percent of thirty-year old males had earnings in 1979 compared to 76 percent of thirty-year-old males in 1992. Seventy-five percent of thirty-year-old males had income in 1979 compared to 80 percent in 1992. This evidence does not suggest that males' economic status at age thirty became a worse measure of their permanent economic status.

Although this evidence does not suggest that changes in measurement error or sample selection are likely to be a large source of error in the trend in β_p, we re-estimated equation 1 for thirty-five year old sons (not shown). Thirty-five year olds should be less susceptible to any problems associated with son's assuming adult roles at a later age. We only have data for the oldest three cohorts of thirty year olds at age thirty-five. For all outcomes the trend in β_p is the same when outcomes are measured at age thirty-five as age thirty.

As noted above, the elasticity of parental income and son's economic status is somewhat lower for sons from single parent families than for sons from married couple families. Conceivably the increase in single parent families could explain the decline in the effect of parental income. The proportion of sons whose parents were married when the son was nineteen years old increased from 81.9 percent for the oldest cohort to 86.7 percent for the second cohort, then declined to 85.1 percent for the third cohort, to 81.7 percent for the fourth cohort, and 81.1 percent for the youngest. However, when we estimate β_p only for children whose parents were married, the trend in the effect of parental income on son's income and wages hardly changes.

The proportion of the sample that is black also increases from 8.6 percent for the oldest cohort to 9.1 percent for the youngest cohort. The elasticity between family income and son's

income is higher for black families than for non-black families (.313 compared to .267), and the elasticity between family income and son's wages is higher for black families than non-black families (.290 compared to .208). Thus the decline in the elasticity between parental income and sons' income or wages cannot be due to the increasing number of black families in the sample.

VI. Conclusions

The results in this paper suggest that the intergenerational correlation of parents' and son's income was lower for sons born between 1963 and 1965 than for son's born in 1949 and 1952. The effect of parental income on sons' wages also declined but the decline was not statistically significant, partly because the sample for sons' wages is smaller than the sample for sons' income. The decline in the effect of parental income on son's income was partly due to this decline in the effect of parental income on son's wages and partly due to the decline in the effect of parental income on son's years of schooling. The decline in the effect of parental income on son's wages was mainly due to the decline in the effect of parental income on sons' years of schooling.

The returns to schooling increased over this period. If the effect of parental income on son's educational attainment had not declined, the effect of parental income on son's wages and income presumably would have increased due to the increase in the returns to schooling. If the returns to schooling had not increased so much, the effect of parental income on son's wages might have declined even more.

The effect of other parental characteristics including parental education and marital status on son's income and wages did not decline. Thus the decline in the effect of parental income is not part of an overall decline in the effect of family background.

These results are fragile. The sample sizes are small and the time period over which we estimate the trend in mobility is short. Although these results are consistent with other results using PSID data, they are inconsistent with studies using other data that find either no trend in the effect of parental income on son's income (Hauser 1999) or an increase in the effect (Levine 1999). Only when we have additional data over a longer period of time will we be able to estimate the trend in intergenerational economic mobility with confidence. However, the trend in income mobility is consistent with the trend in occupational mobility, which lends credibility to the conclusion that intergenerational economic mobility has increased. We hypothesize that the decline in the effect of parental income was due to an increase in non-family investments in children and present some tentative evidence to support this hypothesis. However, it will take considerably more research to test this hypothesis.

Appendix

Data Description

We select all individuals born between 1949 and 1965, who had parents in the PSID, and who had positive wages or income when they were thirty years old. To link these individuals to their parents, we use the Parent Identification File.

Variable definitions

Parental Income is averaged over the years when the son was nineteen to twenty-five. In principle we wish to measure parental income over a child's entire childhood. However, averaging income over such a long period would reduce the sample size to an unworkably small number. We assume that family income when children are nineteen to twenty-five is strongly correlated with their family income when they were younger. For the youngest cohorts we estimated similar models measuring parental income when children were twelve to fourteen years old and obtained substantively similar results. We also selected a subset of respondents for whom we had family income data both during early adolescence and during early adulthood. We then used a Chow test to determine if the coefficients in the sample with income measured at a young age were the same as the coefficients for the sample with income measured later. We failed to reject the null hypothesis that these coefficients were the same at the one percent level.

Black is an indicator variable equal to one if the head of household or respondent identified his race as black, zero otherwise. We derived the race variables primarily from the 1972 wave of the PSID. For those missing information in 1972, we used information from the 1968-1971 waves as well. The majority of the race variables in the PSID (i.e., until 1985) were based on the 1972 wave. Thus, we use this variable for consistency. For individuals younger than 20 in 1972, this variable is the race of the head of the household in which they resided.

Parental education is the mother's years of schooling when the son was nineteen years old. When this value was missing we used mother's education for the first available subsequent year up to the time when the son was age twenty-five. If the mother's education was still missing, we used the education of the father when the son was twenty-five.

Parents' marital status is an indicator variable equal to one if the son's parents were married when the child was nineteen.

Son's income is total family income for sons who head their own household.

Son's wages is the hourly wage rate for sons who head their own household.

Son's experience is the total number of hours the son worked from age nineteen through age twenty-nine.